

Cripple Creek Deep Cut Exercise
Problem Booklet

NIOSH
Pittsburgh Research Laboratory
Pittsburgh, Pennsylvania

Instructions

Read the problem situation described on the next page. Next, answer each of the 8 questions. Do them one at a time. Don't jump ahead, but you may look back to earlier questions and answers. Some questions ask you to select ALL of the answers that you think are correct. Other questions ask you to select only ONE answer unless you are told to "Try again!" Follow the directions for each question.

After you have selected a choice to a question, look up its number on the answer sheet. Select your answer(s) to each question by rubbing the developing pen between the brackets on the answer sheet. A hidden message will appear and tell you if you are right. When you have finished, you will learn how to score your performance.

Background

Your regular job is on the general labor crew at Cripple Creek #9, a four section continuous mining operation. You and the rest of the miners had annual refresher training about 3 months ago.

Entries and crosscuts are 20' wide and pillars are on 80' centers. Average seam height is 48".

Mains are 9 entries wide while panels are 5 entries across.

Blowing ventilation is used at the face. All remote controlled continuous miners are equipped with scrubbers.

The approved roof control plan allows for extended cuts up to 40' in depth from the last full row of undisturbed permanent roof supports. A 4 cut sequence of 20' lifts is used. The mine plan calls for a reduction in cut depth when poor roof conditions are encountered.

The mine uses 48" mechanical anchor roof bolts under normal mining conditions and 60" mechanical anchor bolts when adverse roof conditions are encountered. Bolt lengths are marked in inches on the bolt heads.

Each section has one twin boom roof bolter.

The mine uses track haulage for moving personnel, equipment, and supplies, while coal is transported from sections on 48" belt.

Shuttle cars with operator compartments on the outby end of the machine are used for face haulage, and three cars are run when a section is taking deep cuts.

All sections have a scoop for cleaning the runways and bringing supplies from the end of the track.

All sections have first aid equipment stored in the dinner hole.

All miners carry a person-wearable self-contained self-rescuer.

There is a sump pump located at the mouth of the section.

Problem

For the past few days you have been sent to 2 South panel to fill in as the third shuttle car operator. This morning, though, your buggy is down. Dave, the face boss, asks you to get the scoop and take seven or eight timbers to the number 5 entry. The last shift got off sight line. (See Figure 1.) The miner will be working in entry 5 while the bolter crew pins entry 4.

When you get up to the face you see that Mo, the miner operator, has rounded off the left inby corner in order to make his first cuts in the right hand rib. Now, he has squared around enough so that you and Red, the miner helper, can set some posts on the corner. The two of you prepare to set posts along the left inby rib of #5 entry. Now turn to Question A.

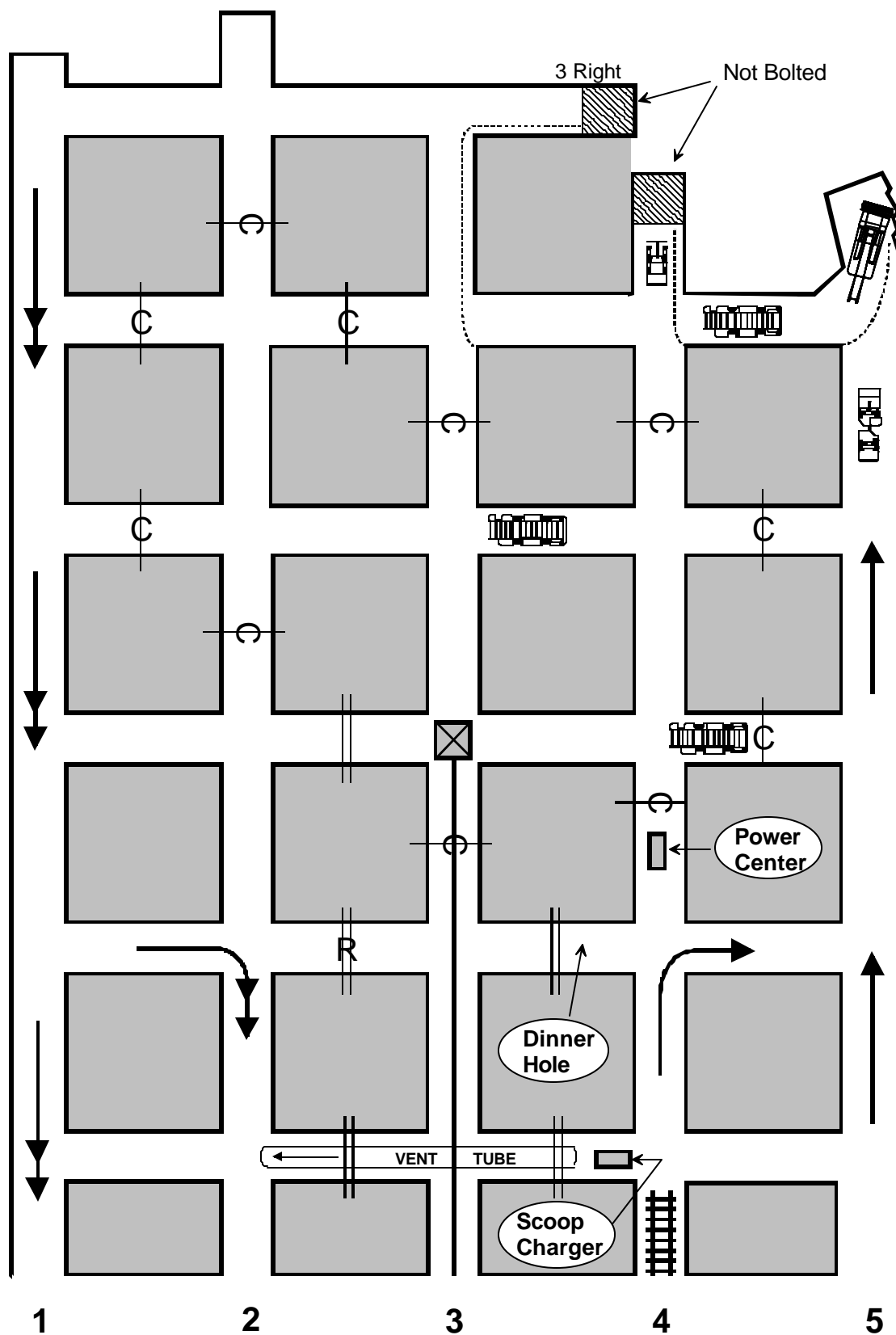


Figure 1

Question A

You and Red quickly set timbers along the left rib. The shuttle car that has been waiting pulls under the boom of the miner. (See Figure 2.) Mo resumes positioning the machine. Red suggests you move closer to the face to get out of the way. What should you do? (Choose only ONE unless told to "Try Again!")

1. Stay with Red while Mo positions the miner.
2. Stay near the pivot point of the miner.
3. Signal Mo with your caplamp to shut down the machine.
4. Squeeze back around the corner between the timbers so that you're out of the way.
5. Shut the miner down by hitting the panic button on the left rear side of the machine so you can get out of the way safely.

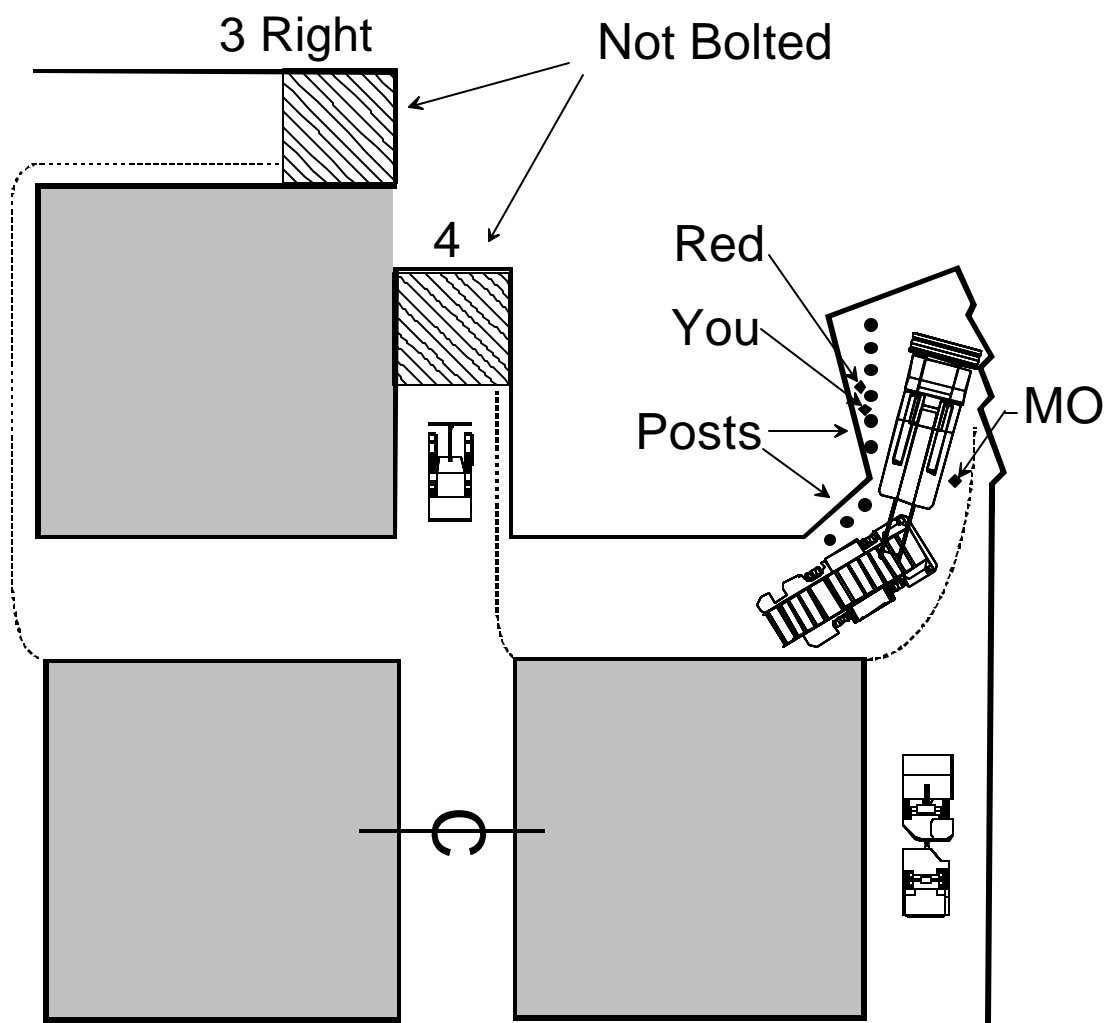


Figure 2

Question B

You tell Mo that you and Red are finished setting posts and need to get outby the miner. Red says "Nah ... I always stay up on this side when I don't have to handle cable. Stick around." What should you do? (Select as MANY as you think are correct.)

- 6. Since the miner operator now knows your location, go ahead and stay with Red.
- 7. Before the operator resumes mining, leave the face area and move to a safer position.
- 8. Position yourself so that you can always see Mo's caplamp.
- 9. Tell Red you both should get outby the continuous miner on the operator's side.

When you have made your selection(s) do the next question.

Question C

Before Mo resumes mining, you move outby and position yourself on the machine operator's side. The foreman, Dave, comes by and tells you to scoop the faces. You scoop and dust entries #1 and #2. You then make your first pass in #3. As you reach the crosscut between entries 3 & 4, you see it hasn't been bolted all the way in. There is a "Danger Unsupported Roof" sign on the last row of bolts about 20 feet back from the face. What should you do now? (Choose only ONE unless told to "Try Again!".)

10. Go ahead and scoop entry #3 and dump at the face of #3. Then wait to scoop #3 Right until after it is bolted.
11. Scoop #3 entry and dump the spillage on the belt feeder.
12. Take what spillage you have in your bucket over to #4 entry and scoop it.
13. Scoop # 3 and dump the spillage in the face of entry #2.
14. Set several timbers in the 3 Right crosscut. Then scoop the area that has been bolted.

Question D

You finish scooping the faces and park the scoop out of the way. You go to the dinner hole for a drink of water. Dave stops and tells you that Mo was called out of the mine for an emergency at home, and that Red will run the miner the rest of the shift and you are to be the miner helper. You go get the scoop and take it back to the charger station. By the time you return to the face, Red has trammed the miner to #4 and is ready to mine. He says "Come on let's go - we're takin' a deep cut!" (See Figure 3.) What should you and Red do? (Select as MANY as you think are correct.)

15. Examine entry #4 from the first outby crosscut to the face, checking conditions and examining for hazards.
16. Begin mining and take a full deep cut.
17. Begin mining and take a standard 20' cut.
18. Wait until the roof bolting machine comes out of 3 Right into the straight.
19. Go over to the crosscut between #3 and #4 entries and ask the bolters if they are finished.

When you have made your selection(s) do the next question.

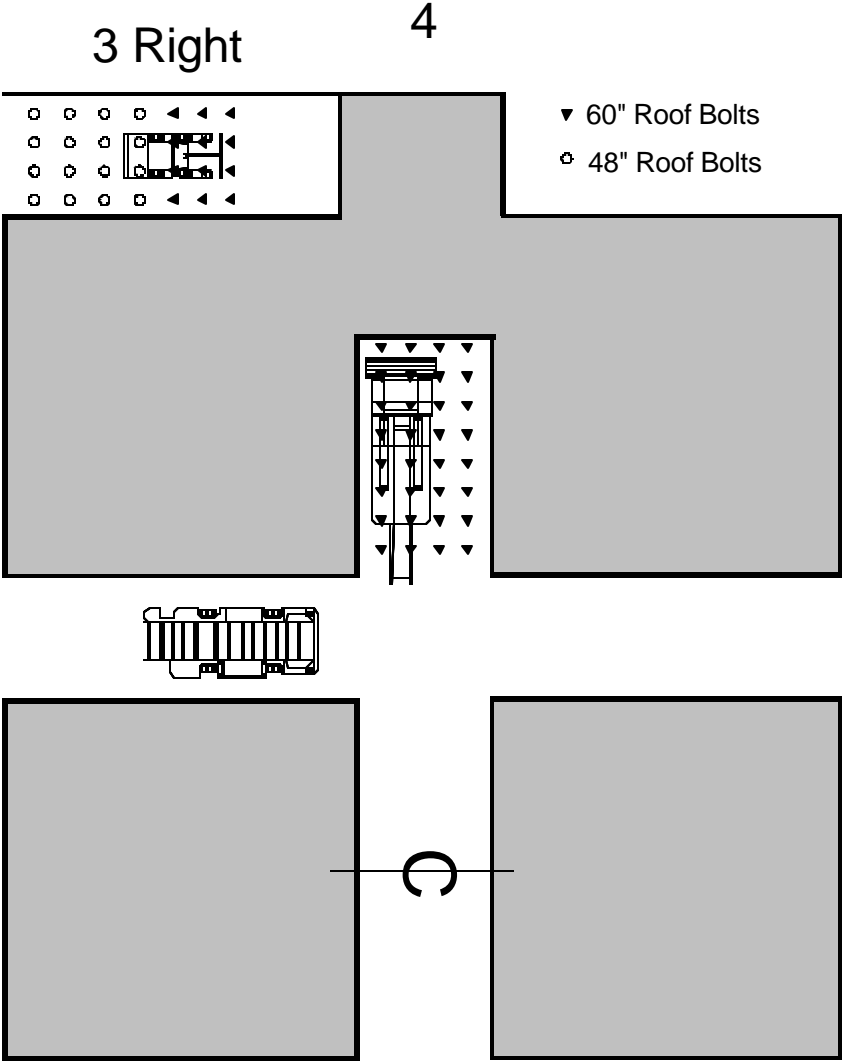


Figure 3

Question E

You convince Red to wait until you can make sure the bolters are out of 3 Right. The bolters come by and tell you the top was drummy near the face of 3 Right. They also tell you they noticed a 1 inch separation in the top about 4 feet above the coal when they bolted in #4. The bolters tell you they switched to 5 foot bolts. Red says, "These guys are wimps - let's get it in the coal and take a deep cut!" What should you do now? (Select as MANY as you think are correct.)

- 20. Help Red mine the deep cut, being careful to watch the top when taking out the left side lifts.
- 21. Tell Red that he should not take a deep cut since there are signs that the top may be getting bad.
- 22. While Red takes a deep cut and removes the left side lifts, watch the top from 3 Right and see what it does.
- 23. Go find the foreman, Dave, and tell him what the bolters told you about the top and ask him to check the face area in 3 Right.

When you have made your selection(s) do the next question.

Question F

You tell Red that he shouldn't take a deep cut but he ignores you. You look for Dave and are told by the mechanic that he is outby checking the section pump. When you come back to the face, Red is starting the third 20' lift in entry #4. He finishes this lift and starts mining the fourth 20' lift. The miner cuts through into 3 Right. (See Figure 4.) With less than 10 feet to cut in this lift, the onboard circuit breaker on the miner trips. Red says, "It's that blasted breaker on the miner again!" What should be done now? (Choose only ONE unless told to "Try Again!".)

- 24. Set timbers from 3 Right over to the miner and then use cribbing over the miner to get to the breaker.
- 25. Have the bolters pin entry #4 up to the boom of the miner; afterwards set a minimum of two rows of timbers on 4' centers up to the breaker on the miner.
- 26. Have the bolter come to 3 Right and set the ATRS next to the miner so you can then reset the breaker on the miner.
- 27. Sound the top and if it rings solid, quickly go up and reset the breaker.

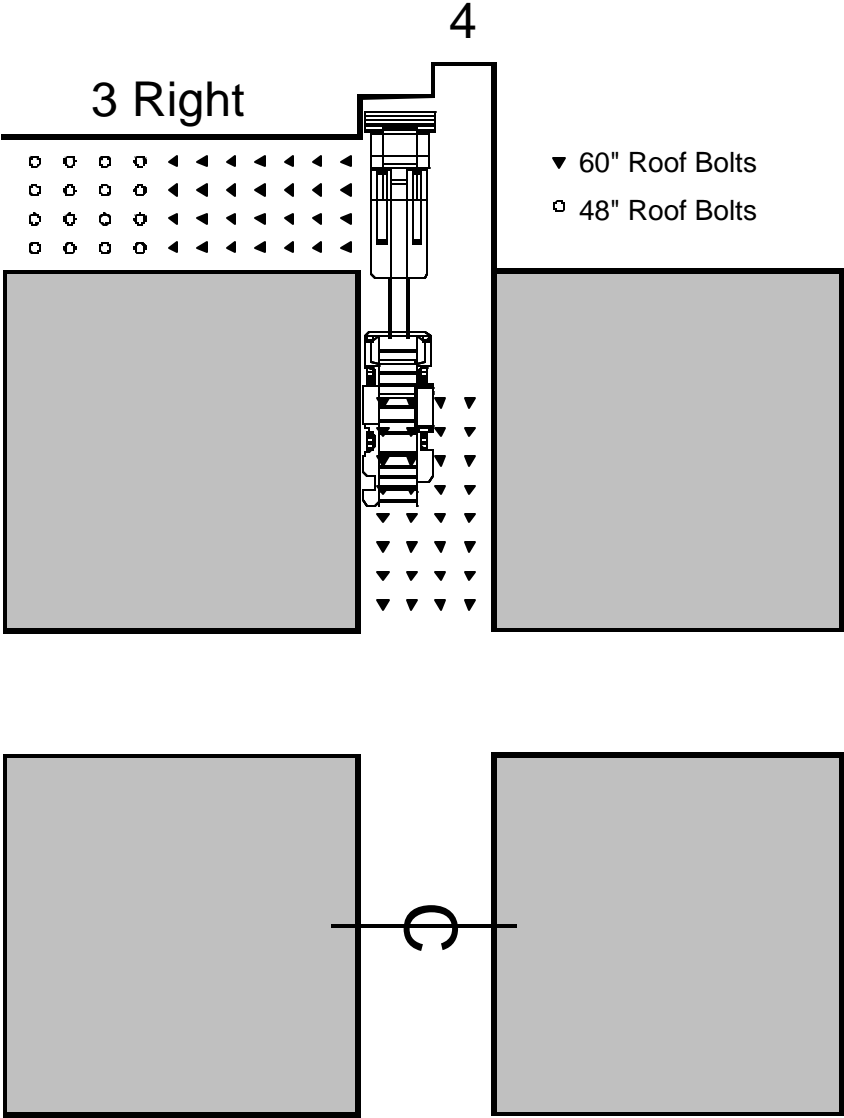


Figure 4

Question G

The bolters install a row of pins behind the boom of the miner and then you set 3 rows of timbers up to the machine. (See FIGURE 5.) Red resets the breaker and as he comes back toward permanent support, you hear the timbers start to "crack". You suddenly realize that no cable or chain was laced around the timbers to remove them remotely. You know they need to be removed before you resume mining. What should be done now? (Choose only ONE unless told to "Try Again!".)

- 28. You and Red walk a cable or chain around the timbers so they can be pulled remotely.
- 29. You knock the timbers out with the sledgehammer that's kept at the belt feeder.
- 30. You suggest that Red tram the miner out of the cut. Once it is clear, evaluate the situation.
- 31. You suggest that Red back the miner out taking the timbers as he goes.

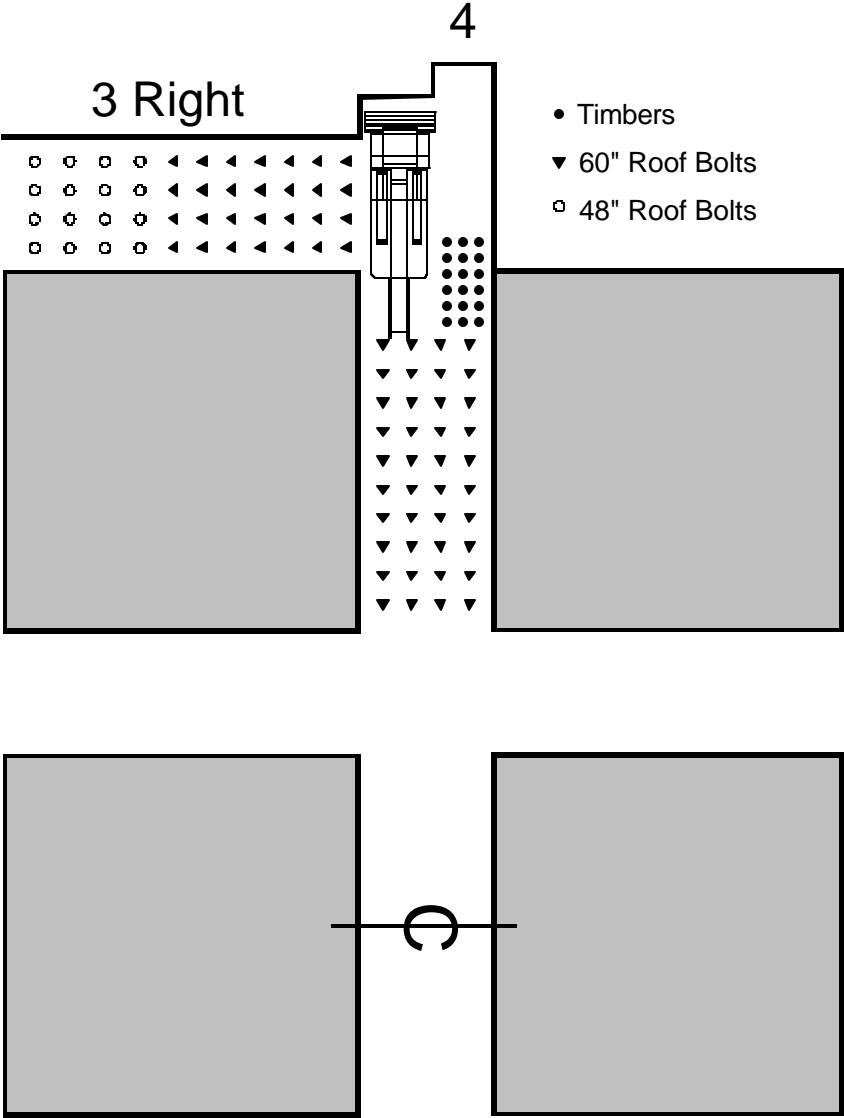


Figure 5

Question H

Red begins backing the miner out but takes down several timbers in the process. As he continues to maneuver the miner out, the intersection comes in, partially covering the miner. You will be helping to clean up the fall the rest of the shift. Dave, the foreman, returns. You are unhappy about the situation and want to do something, but what? (Choose only ONE unless told to "Try Again!".)

- 32. Wait until you get Red alone and remind him he should have paid more attention to the danger signals before taking a deep cut.
- 33. Inform Dave of the situation and how it occurred.
- 34. Tell Dave that you are going to take this issue to the mine safety personnel to ensure that this situation doesn't happen again.
- 35. Tell Dave to call you a ride; you're sick and want to go home.
- 36. Call the MSHA hotline to report this situation.

Question I

The following day, your mine safety director gathers the 2 South panel crew at the start of the shift for a brief safety talk. The discussion topic is deep cut mining and what happened yesterday. Since you are not a regular member of the crew, you want to learn more. There are some questions that need to be answered about deep cut mining. (List your responses on the answer sheet using a pen or pencil.)

37. What are some signs that indicated Red should not have taken a deep cut?
38. What are some other things miners should look for when deciding whether to take a deep cut?
39. Why is clear, concise communication a key factor in the crew's safety, especially when taking deep cuts?

End of Problem

Scoring your performance

1. Count the total number of responses you colored in that were marked "correct". Write this number in the first blank on the answer sheet.
2. Count the total number of incorrect responses you colored in. Subtract this number from 25. Write the difference in the second blank on the answer sheet.
3. The best score is 36. The worst score is 0.